

REMARKS

Claims 1, 2, 4-10, 12-18 and 20-24 are pending in the application. Of the claims, Claims 1, 9, and 17 are independent claims. Claims 1, 2, 4-10, 12-18 and 20-24 are rejected under 35 U.S.C. § 103(a) as being deemed unpatentable over Muller et al. (U.S. Patent Number 6,021,132) in view of Singh et al. (U.S. Patent No. 6,625,159). That rejection is respectfully traversed and reconsideration is requested.

Applicant thanks the Office for granting an interview on June 7, 2005 to discuss a proposed Request for Reconsideration that was faxed to Examiner Tran. Draft arguments that have been submitted in the Amendment After Final were discussed. The Examiner indicated that the amendment submitted in the Amendment After Final and this Amendment to independent Claims 1, 9 and 17 to clarify that the multicast pool of buffers are reserved for only storing IP Multicast packets appeared to overcome the cited prior art. (U.S. Patent No. 6,021,132 granted to Muller et al.) The Amendment After Final has not been entered, and the Applicants are submitting this Amendment.

Regarding Rejections under 35 U.S.C. 103(a)

The applicant's disclosed invention provides reserved pools of buffers in the shared memory. Each reserved pool of buffers is associated with one of the plurality of egress ports and is reserved for storing data to be forwarded through that egress port. The shared memory also includes a shared pool of buffers for storing data to be forwarded through any of the plurality of egress ports and a multicast pool of buffers reserved for only storing IP Multicast packets received on any ingress port. By providing "a multicast pool of buffers in the shared memory reserved for only storing IP Multicast packets received on any ingress port" even if one congested egress port is using all of its reserved buffers and all available buffers in the shared pool of buffers in the shared memory, buffers are available from the multicast pool for storing a received IP Multicast packet. The buffers in the multicast pool of buffers are reserved for only storing IP Multicast packets. (See Applicant's Specification Fig. 2, shared memory (108) reserved pool of buffers (202), shared pool (200); multicast pool (204).)

Cited prior art, Muller is directed to a switch having a single common pool of memory (shared memory) that is shared by all of the ports of the switch. (See Muller Fig. 2, shared

memory (230).) Muller does not teach or suggest at least the Applicant's disclosed "multicast pool of buffers in the shared memory reserved for only storing IP Multicast packets". Applicant is confused as to how the Office can suggest that Muller teaches a multicast pool of buffers in the shared memory reserved for only storing IP Multicast packets when Muller does not explicitly teach reserved pools of buffers in a shared memory.

There is no discussion in Muller of reserving any pool(s) of buffers in the single common pool of memory. In contrast, all received packets including IP Multicast packets are stored in the single common pool of memory. Muller does not teach or suggest buffers that are "reserved for only storing IP Multicast packets". In contrast, IP Multicast packets can be stored in any available buffer in Muller's shared memory.

Furthermore, Muller does not teach or suggest the Applicant's disclosed "pool select logic". Muller merely discusses a single common pool of memory and therefore there is no suggestion of a pool select logic because there is no discussion of separate pools of buffers from which to select a buffer, e.g, IP Multicast pool of buffers reserved for only storing IP Multicast packets. (See Col. 6, lines 60-63; Fig. 3A, shared memory (230).)

Cited prior art, Singh discusses an input buffered switch having shared memory. The shared memory includes a reserved buffer for each input port and unreserved buffers that are shared by the input ports. Buffers are allocated from the unreserved buffers for storing multicast packets or a subset of the buffers reserved for an input port may be further reserved for storing multicast packets received by the input port. (See Col. 5, lines 31- Col. 6, line 3.)

As is well-known to those skilled in the art, a multicast packet received on an input port is typically forwarded to a group of output ports. In the input buffered switch discussed by Singh, all received packets including multicast packets are stored based on the input port on which it was received. The Multicast packets are later duplicated as they are transmitted to each egress port based on the multicast group. In Muller's system, all packets are treated the same, with one copy of each data packet (both multicast and non-multicast packets) received by each input port in the switch being stored in the single common memory. There is no suggestion of a separate multicast pool of buffers reserved for only storing IP Multicast packets. As discussed in the applicant's specification, the problem with a single common pool of memory shared by all of the ports is that all of the memory may be consumed storing data for a congested port leaving no

memory available for storing data to be forwarded to non-congested ports, which results in data packets being dropped for non-congested egress ports.

Singh does not teach or suggest the Applicant's disclosed "reserved pool of buffers associated with one of a plurality of egress ports and reserved for storing data to be forwarded to the egress port". In contrast, Singh discusses reserving buffers for each input port. With buffers reserved per input port, an IP Multicast packet is stored based on the input port at which it was received, there is no suggestion in Singh of "a multicast pool of buffers in the shared memory reserved for only storing IP Multicast packets received from any ingress port ". In contrast, Singh merely discusses storing Multicast packets based on the input port at which they are received using a subset of buffers reserved for the input port or from buffers in a non-reserved pool of buffers. (See col. 4, lines 19-45; col. 5, lines 31-45, col. 5, line 62- col.6, line 3.)

Thus, neither Muller nor Singh singly or in combination teach or suggest the Applicant's disclosed "multicast pool of buffers shared by the egress ports for only storing IP Multicast packets received on any ingress port". (emphasis added.) Even if combined, the combination merely discusses a shared memory having reserved and non-reserved buffers.

Claims 2 and 4-8 are dependent on Claim 1 and thus include this limitation over the prior art. Furthermore the dependent claims recite further limitations that are neither taught or suggested by the cited prior art.

Claim 4 recites "the pool select logic selects a free buffer from the multicast pool upon detecting an IP Multicast data packet received from an ingress port". Neither Muller nor Singh, singly or in combination teach or suggest the Applicant's claimed "multicast pool" and thus, do not teach or suggest "selecting a free buffer from the multicast pool" as claimed by the applicants in dependent claim 4.

Claim 5 recites "the sum of the buffers in the multicast pool, the reserved pool and the shared pool is greater than the total number of buffers in the shared memory". Muller discusses a single common pool of buffers. The Office agrees that Muller does not discuss a reserved pool. With only a single common pool of buffers shared by all of the ports, it is not possible to oversubscribe the pools, that is, "the sum of the buffers in the multicast pool, the reserved pool and the shared pool is greater than the total number of buffers in the shared memory" as claimed by the applicants in dependent claim 5 and described in the applicant's specification on Page 8,

lines 8-21. Singh does not add to Muller the present invention's ability to oversubscribe the pools as argued above.

Independent Claim 17 recites a like distinction in terms of a method and thus similarly patentably distinguishes over the prior art. Claims 18 and 20-24 are dependent on Claim 17 and thus include this limitation over the prior art. Independent Claim 9 and claims dependent on Claim 9 include like limitations distinguishing the cited art.

Therefore, separately or in combination, Muller and Singh do not teach or suggest the Applicants' claimed invention. Thus, none of the cited prior art alone or in combination makes obvious the Applicants' claimed method for reducing pool starvation in a shared memory switch.

Accordingly, the present invention as now claimed is not believed to be made obvious from the cited art or any of the prior art. Removal of the rejections under 35 U.S.C. 103(a) and acceptance of Claims 1-2, 4-10, 12-18 and 20-24 is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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